Practical 1

Aim: Introduction to OS and shell.

1. Access the command Line
2. Manage files and directories from command line
3. Create, edit and and view text files

Commands for reference:

Directory: mkdir, rmdir, cd, pwd, ls, mv

Editor: vi, gedit

File Handling/Text: cp, mv, rm, sort, cat, file, less, more, cmp, diff, comm, head, tail, cut, grep, touch, tr, uniq

Self-Study:

User Access: login, logout, passwd, exit

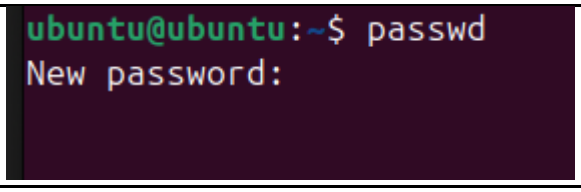
Information: man, who, date, cal, tty, calendar, time, bc, who, whoami, which, hostname, history, wc, finger, uname

Help: man, help

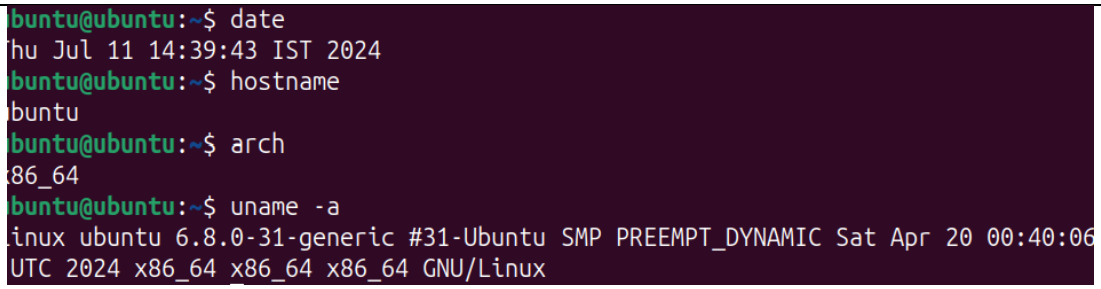
Terminal: echo, clear

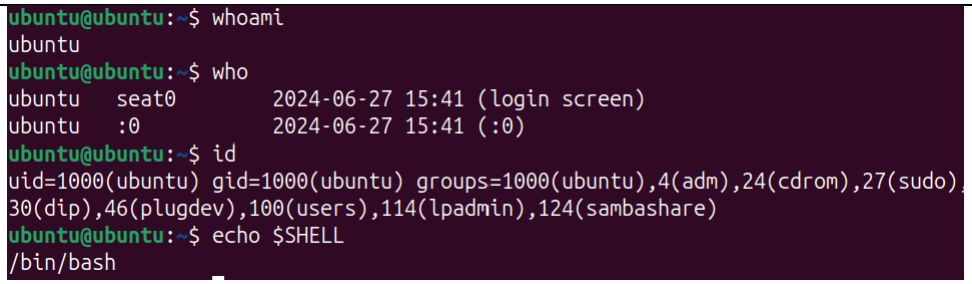
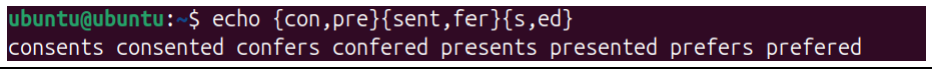
Exercise - 0

Enter these commands at the UNIX prompt, and try to interpret the output.

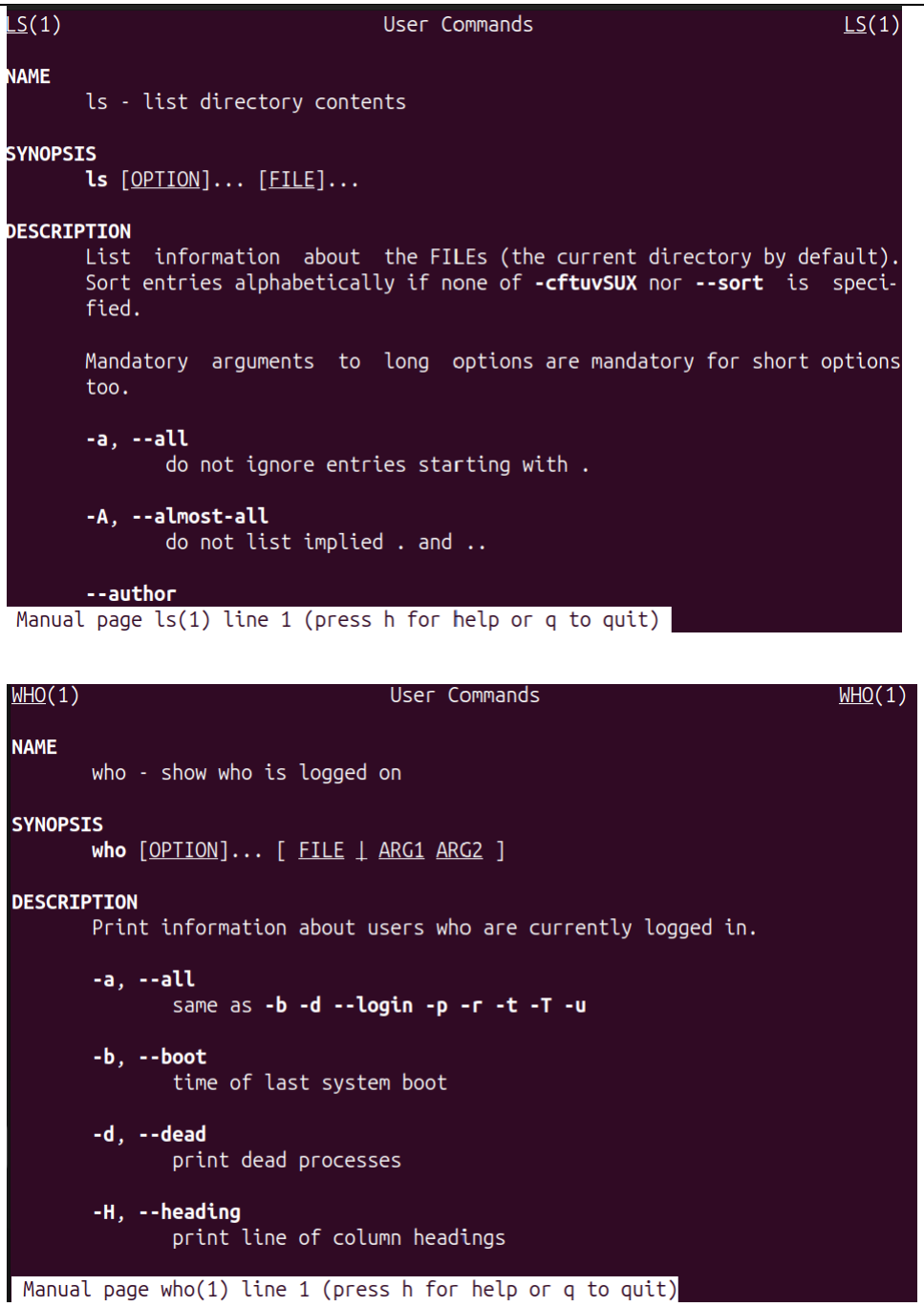
Que.	1. Passwd
Command	1.passwd
Output	

Que.	2. Date 3. Hostname 4. Arch 5. uname –a
Command	2. date

	3. hostname 4. arch 5. uname –a
Output	

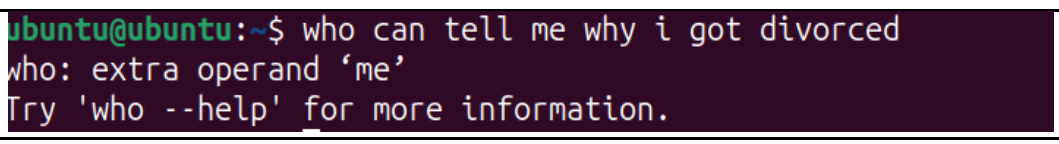
Que.	6. whoami 7. who 8. id 9. echo $SHELL 10. echo {con,pre}{sent,fer}{s,ed}
Command	6. whoami 7. who 8. id 9. echo $SHELL 10. echo {con,pre}{sent,fer}{s,ed}
Output	 

Que.	11. man ls 12. man who
Command	11. man ls 12. man who

Output	

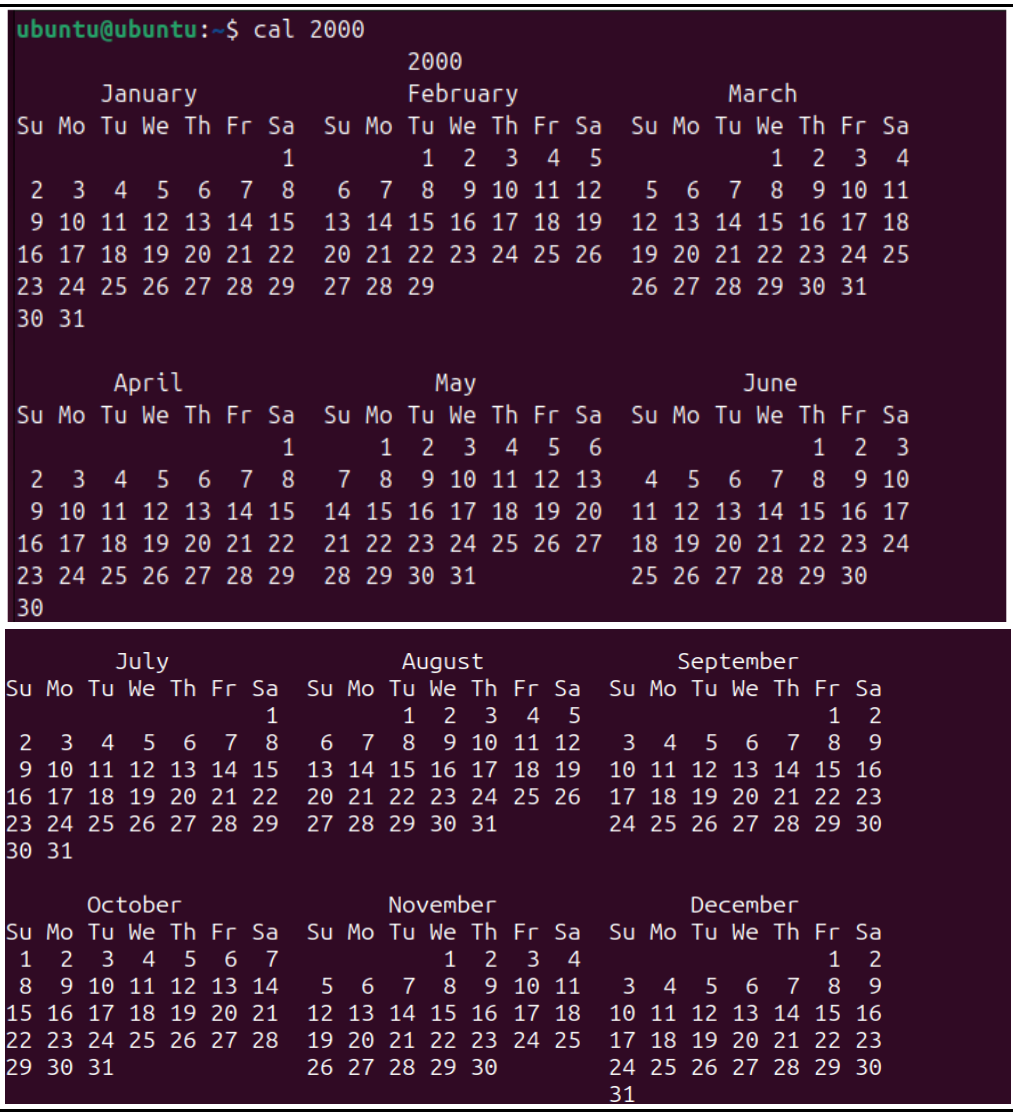
```
LS(1)                          User Commands                          LS(1)

NAME
       ls - list directory contents

SYNOPSIS
       ls [OPTION]... [FILE]...

DESCRIPTION
       List  information  about  the FILEs (the current directory by default).
       Sort entries alphabetically if none of -cftuvSUX nor --sort  is  speci-
       fied.

       Mandatory  arguments  to  long  options are mandatory for short options
       too.

       -a, --all
              do not ignore entries starting with .

       -A, --almost-all
              do not list implied . and ..

       --author
 Manual page ls(1) line 1 (press h for help or q to quit)
```

```
WHO(1)                         User Commands                         WHO(1)

NAME
       who - show who is logged on

SYNOPSIS
       who [OPTION]... [ FILE | ARG1 ARG2 ]

DESCRIPTION
       Print information about users who are currently logged in.

       -a, --all
              same as -b -d --login -p -r -t -T -u

       -b, --boot
              time of last system boot

       -d, --dead
              print dead processes

       -H, --heading
              print line of column headings

 Manual page who(1) line 1 (press h for help or q to quit)
```

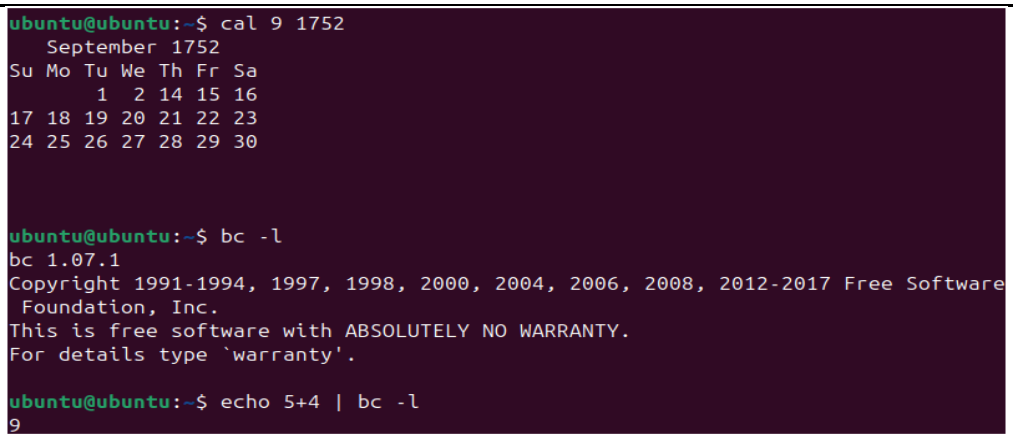
Que.	13. who can tell me why I got divorced 14. clear
Command	13. who can tell me why I got divorced 14. clear
Output	

```
ubuntu@ubuntu:~$ who can tell me why i got divorced
who: extra operand ‘me’
Try 'who --help' for more information.
```

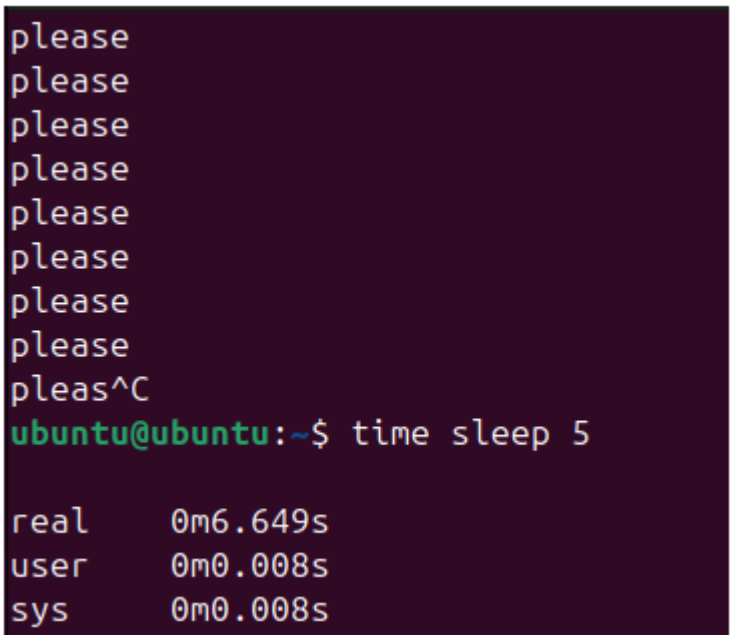
Que.	15. cal 2000
Command	15. sudo apt install ncal

	cal 2000
Output	

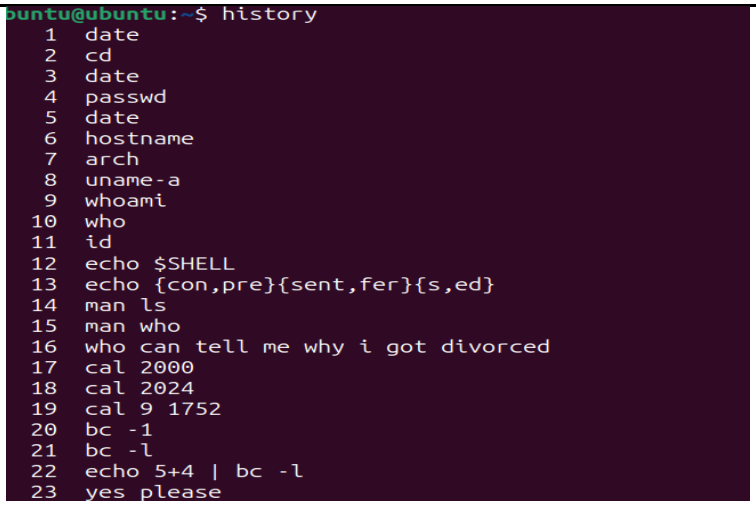
```
ubuntu@ubuntu:~$ cal 2000
                                2000
      January               February                March
Su Mo Tu We Th Fr Sa  Su Mo Tu We Th Fr Sa  Su Mo Tu We Th Fr Sa
                   1            1  2  3  4  5            1  2  3  4
 2  3  4  5  6  7  8   6  7  8  9 10 11 12   5  6  7  8  9 10 11
 9 10 11 12 13 14 15  13 14 15 16 17 18 19  12 13 14 15 16 17 18
16 17 18 19 20 21 22  20 21 22 23 24 25 26  19 20 21 22 23 24 25
23 24 25 26 27 28 29  27 28 29              26 27 28 29 30 31
30 31

       April                  May                   June
Su Mo Tu We Th Fr Sa  Su Mo Tu We Th Fr Sa  Su Mo Tu We Th Fr Sa
                   1      1  2  3  4  5  6               1  2  3
 2  3  4  5  6  7  8   7  8  9 10 11 12 13   4  5  6  7  8  9 10
 9 10 11 12 13 14 15  14 15 16 17 18 19 20  11 12 13 14 15 16 17
16 17 18 19 20 21 22  21 22 23 24 25 26 27  18 19 20 21 22 23 24
23 24 25 26 27 28 29  28 29 30 31           25 26 27 28 29 30
30

       July                  August               September
Su Mo Tu We Th Fr Sa  Su Mo Tu We Th Fr Sa  Su Mo Tu We Th Fr Sa
                   1            1  2  3  4  5                  1  2
 2  3  4  5  6  7  8   6  7  8  9 10 11 12   3  4  5  6  7  8  9
 9 10 11 12 13 14 15  13 14 15 16 17 18 19  10 11 12 13 14 15 16
16 17 18 19 20 21 22  20 21 22 23 24 25 26  17 18 19 20 21 22 23
23 24 25 26 27 28 29  27 28 29 30 31        24 25 26 27 28 29 30
30 31

      October               November              December
Su Mo Tu We Th Fr Sa  Su Mo Tu We Th Fr Sa  Su Mo Tu We Th Fr Sa
 1  2  3  4  5  6  7               1  2  3  4                  1  2
 8  9 10 11 12 13 14   5  6  7  8  9 10 11   3  4  5  6  7  8  9
15 16 17 18 19 20 21  12 13 14 15 16 17 18  10 11 12 13 14 15 16
22 23 24 25 26 27 28  19 20 21 22 23 24 25  17 18 19 20 21 22 23
29 30 31              26 27 28 29 30        24 25 26 27 28 29 30
                                            31
```

Que.	16. cal 9 1752 17. bc -l 18. echo 5+4 | bc –l
Command	16. cal 9 1752 17. bc -l 18. echo 5+4 | bc –l
Output	

```
ubuntu@ubuntu:~$ cal 9 1752
   September 1752
Su Mo Tu We Th Fr Sa
       1  2 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30



ubuntu@ubuntu:~$ bc -l
bc 1.07.1
Copyright 1991-1994, 1997, 1998, 2000, 2004, 2006, 2008, 2012-2017 Free Software
 Foundation, Inc.
This is free software with ABSOLUTELY NO WARRANTY.
For details type `warranty'.

ubuntu@ubuntu:~$ echo 5+4 | bc -l
9
```

Que.	19. yes please 20. time sleep 5
Command	19. yes please 20. time sleep 5
Output	

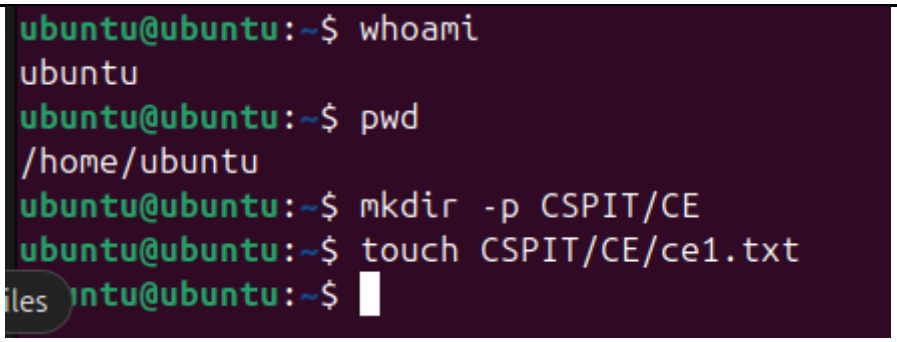
```
please
please
please
please
please
please
please
please
pleas^C
ubuntu@ubuntu:~$ time sleep 5

real    0m6.649s
user    0m0.008s
sys     0m0.008s
```

Que.	21. history
Command	21. history
Output	

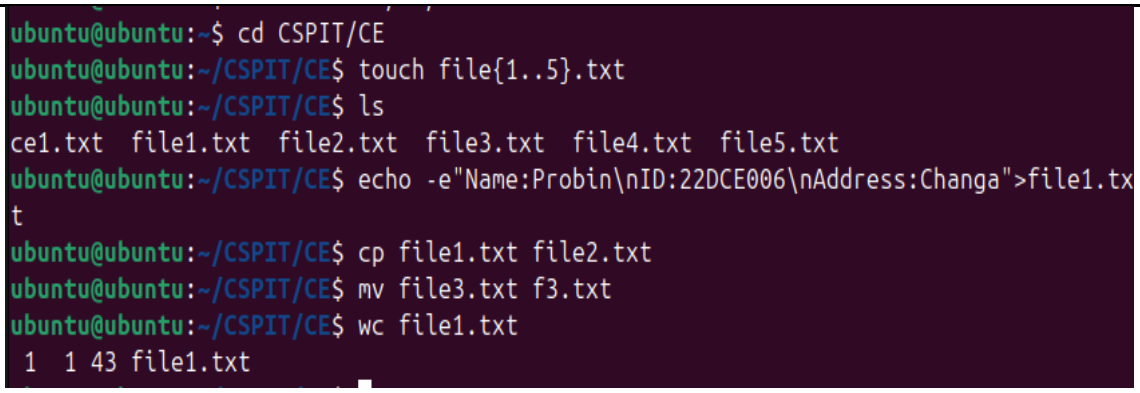
```
buntu@ubuntu:~$ history
   1  date
   2  cd
   3  date
   4  passwd
   5  date
   6  hostname
   7  arch
   8  uname-a
   9  whoami
  10  who
  11  id
  12  echo $SHELL
  13  echo {con,pre}{sent,fer}{s,ed}
  14  man ls
  15  man who
  16  who can tell me why i got divorced
  17  cal 2000
  18  cal 2024
  19  cal 9 1752
  20  bc -1
  21  bc -l
  22  echo 5+4 | bc -l
  23  yes please
```

Exercise-1

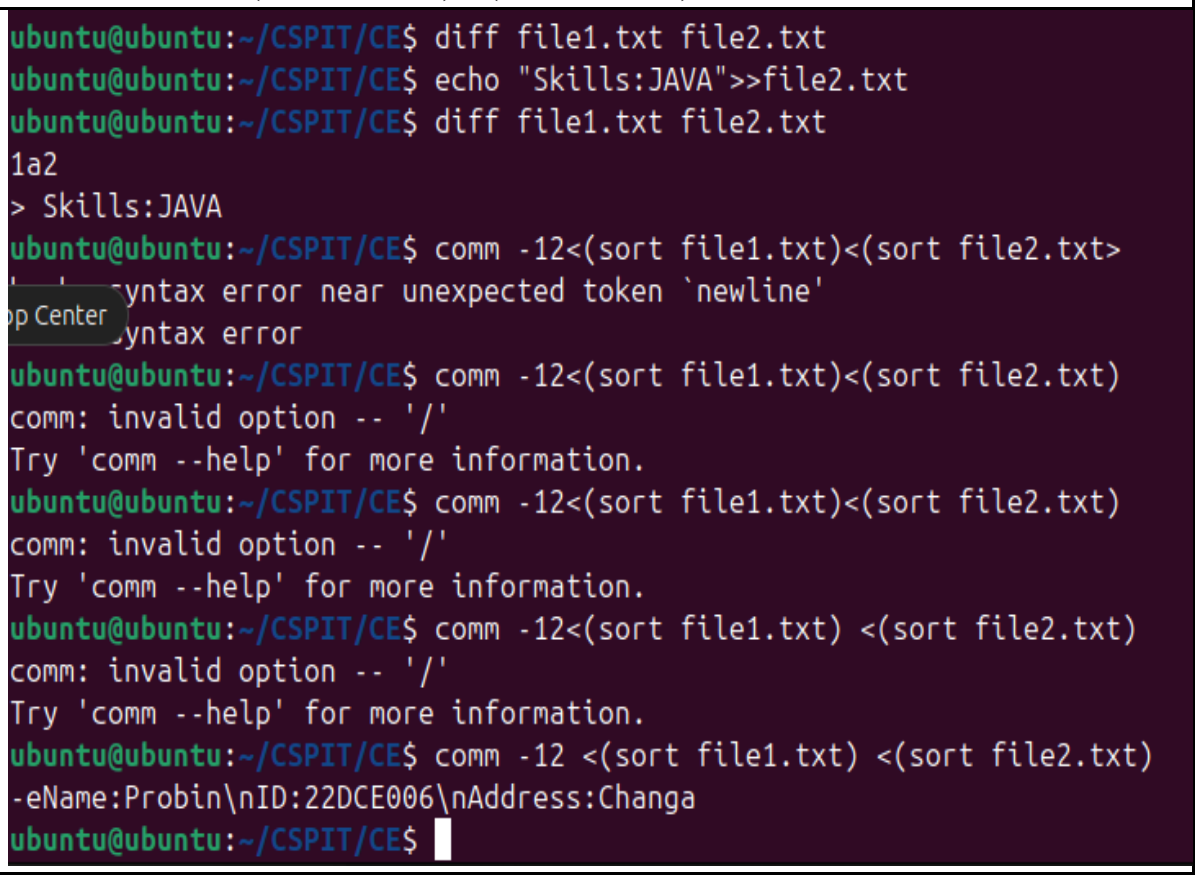
Try the following command sequence.

Que.	1. Display username of current user. 2. Display current working directory. 3. Make a sub directory named CE in a directory named CSPIT. 4. Create an empty file “ce1.txt” from command prompt.
Command	1. whoami 2. pwd 3. mkdir -p CSPIT/CE 4. touch CSPIT/CE/ce1.txt
Output	

Que.	5. Add the content from command prompt in “ce1.txt”. 6. Display the content of “ce1.txt” file. 7. Change working directory to CE. 8. Make 5 empty files named file1.txt to file5.txt in same directory. 9. List all the files in the directory CE. 10. Add the Name, ID no, and address with pin code to “file1.txt”. 11. Copy contents of file1.txt to file2.txt. 12. Rename file3.txt to “f3.txt”. 13. Display the number of lines, number of words, number of characters of “file1.txt”.
Command	5. echo -e “Probin” 6. cat file1.txt 7. cd CSPIT/CE 8. touch file{1..5}.txt 9. ls 10. echo -e “Name: Probin \nID: 22DCE006\nAddress: Changa”>file1.txt 11. cp file1.txt file2.txt

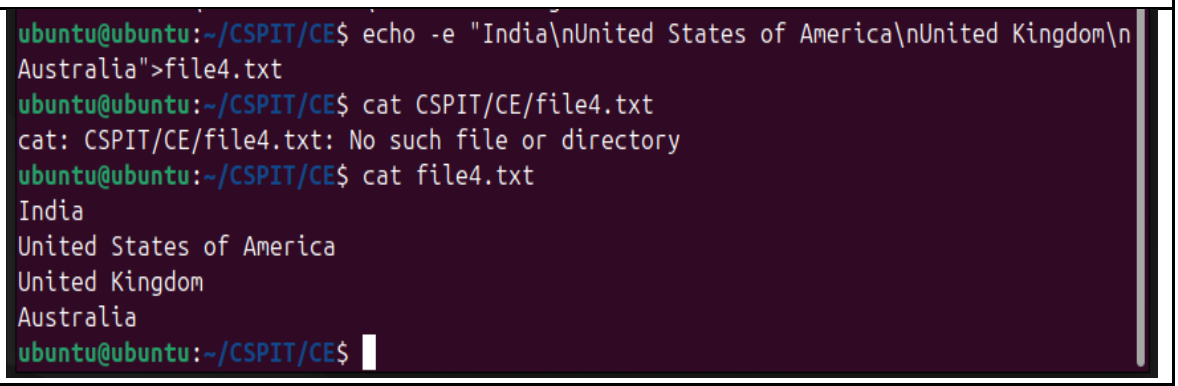
	12. mv file3.txt f3.txt 13. wc file1.txt
Output	

```
ubuntu@ubuntu:~$ cd CSPIT/CE
ubuntu@ubuntu:~/CSPIT/CE$ touch file{1..5}.txt
ubuntu@ubuntu:~/CSPIT/CE$ ls
ce1.txt  file1.txt  file2.txt  file3.txt  file4.txt  file5.txt
ubuntu@ubuntu:~/CSPIT/CE$ echo -e"Name:Probin\nID:22DCE006\nAddress:Changa">file1.tx
t
ubuntu@ubuntu:~/CSPIT/CE$ cp file1.txt file2.txt
ubuntu@ubuntu:~/CSPIT/CE$ mv file3.txt f3.txt
ubuntu@ubuntu:~/CSPIT/CE$ wc file1.txt
 1  1 43 file1.txt
```

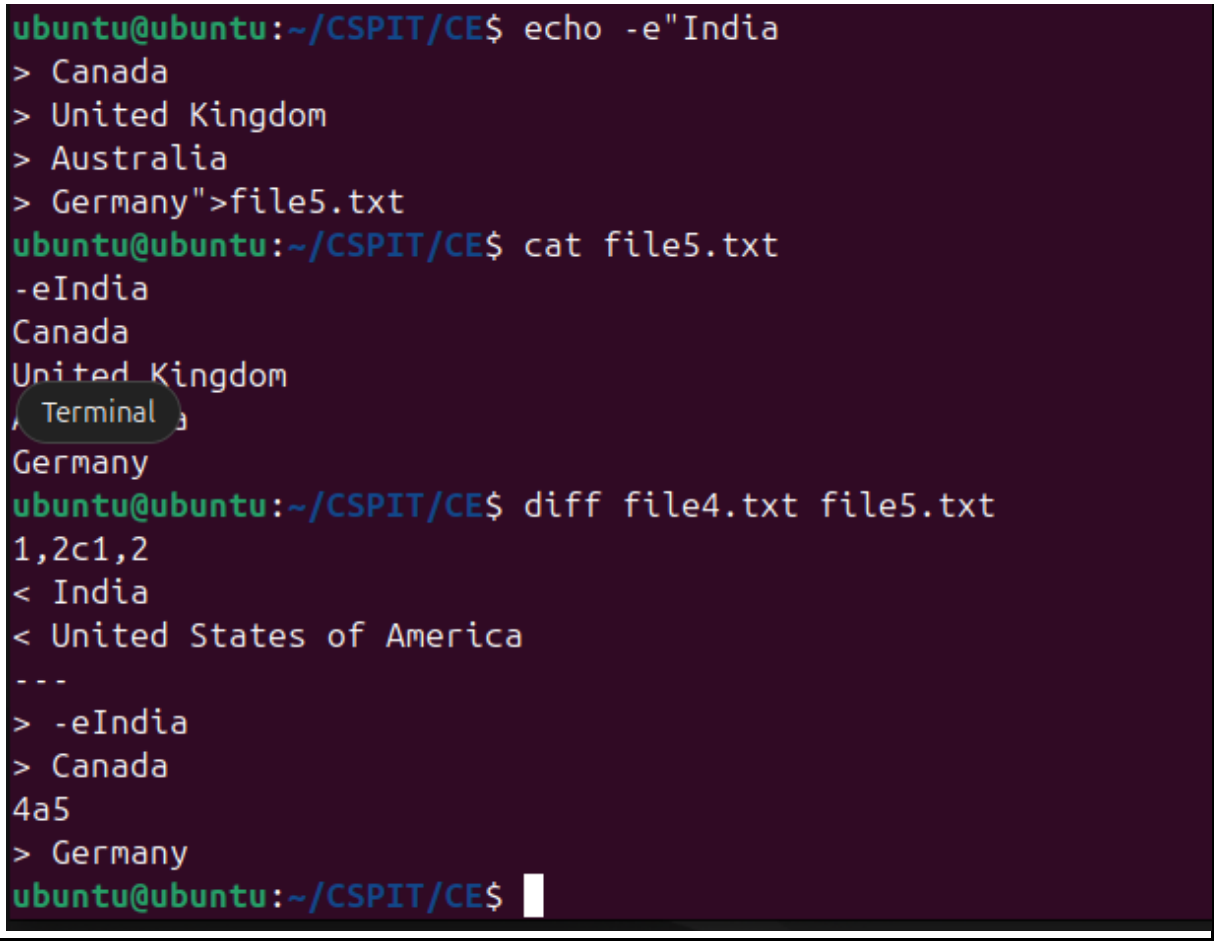
Que.	14. Compare the files “file1.txt” to “file2.txt” 15. Update the content of “file2.txt”. Add your skill to existing file. 16. Compare the files “file1.txt” to “file2.txt” 17. Report what is common in the above given files.
Command	14. diff file1.txt file2.txt 15. echo “Skills : JAVA” >> file2.txt 16. diff file1.txt file2.txt 17. comm -12 <(sort file1.txt) <(sort file2.txt)
Output	

```
ubuntu@ubuntu:~/CSPIT/CE$ diff file1.txt file2.txt
ubuntu@ubuntu:~/CSPIT/CE$ echo "Skills:JAVA">>file2.txt
ubuntu@ubuntu:~/CSPIT/CE$ diff file1.txt file2.txt
1a2
> Skills:JAVA
ubuntu@ubuntu:~/CSPIT/CE$ comm -12<(sort file1.txt)<(sort file2.txt>
yntax error near unexpected token `newline'
yntax error
ubuntu@ubuntu:~/CSPIT/CE$ comm -12<(sort file1.txt)<(sort file2.txt)
comm: invalid option -- '/'
Try 'comm --help' for more information.
ubuntu@ubuntu:~/CSPIT/CE$ comm -12<(sort file1.txt)<(sort file2.txt)
comm: invalid option -- '/'
Try 'comm --help' for more information.
ubuntu@ubuntu:~/CSPIT/CE$ comm -12<(sort file1.txt) <(sort file2.txt)
comm: invalid option -- '/'
Try 'comm --help' for more information.
ubuntu@ubuntu:~/CSPIT/CE$ comm -12 <(sort file1.txt) <(sort file2.txt)
-eName:Probin\nID:22DCE006\nAddress:Changa
ubuntu@ubuntu:~/CSPIT/CE$
```

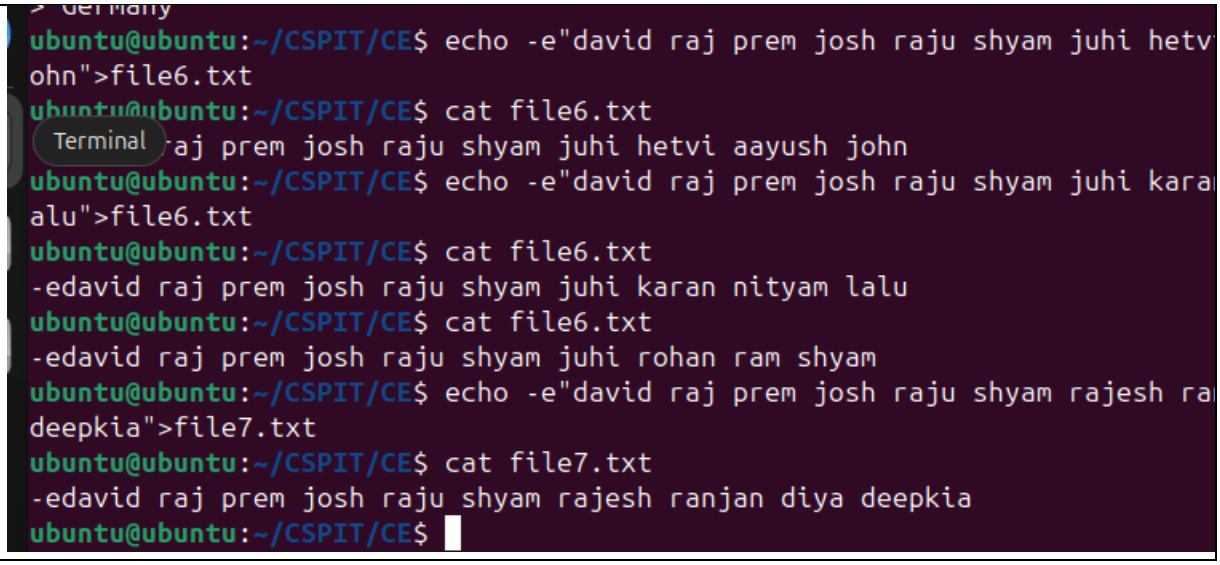
Que.	18. Add the content in “file4.txt” as given: India United States of America

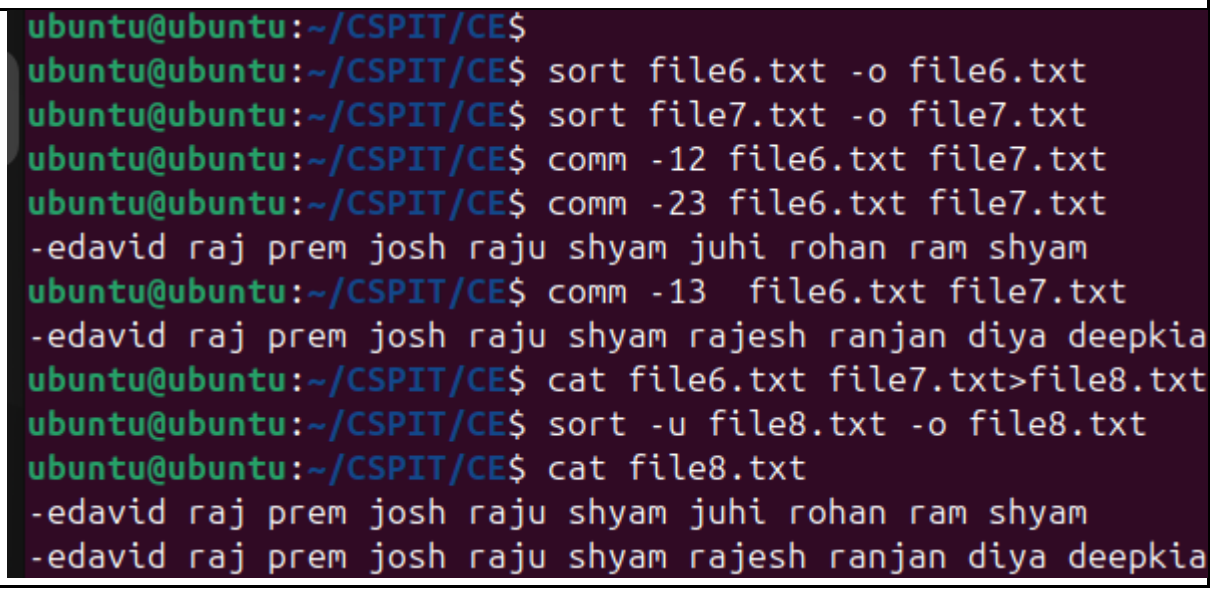
	United Kingdom Australia
Command	18. cat > file4.txt India United States of America United Kingdom Australia
Output	

Que.	19. Add the content in “file5.txt” as given: India Canada United Kingdom Australia Germany 20. Find the difference between “file4.txt” and “file5.txt”. How to make these files identical?
Command	19. cat > file5.txt India Canada United Kingdom Australia Germany 20. diff file4.txt file5.txt

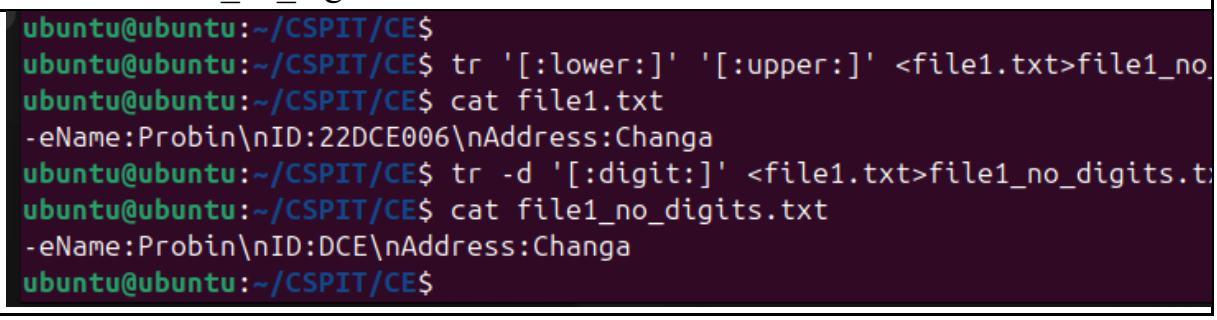
Output	

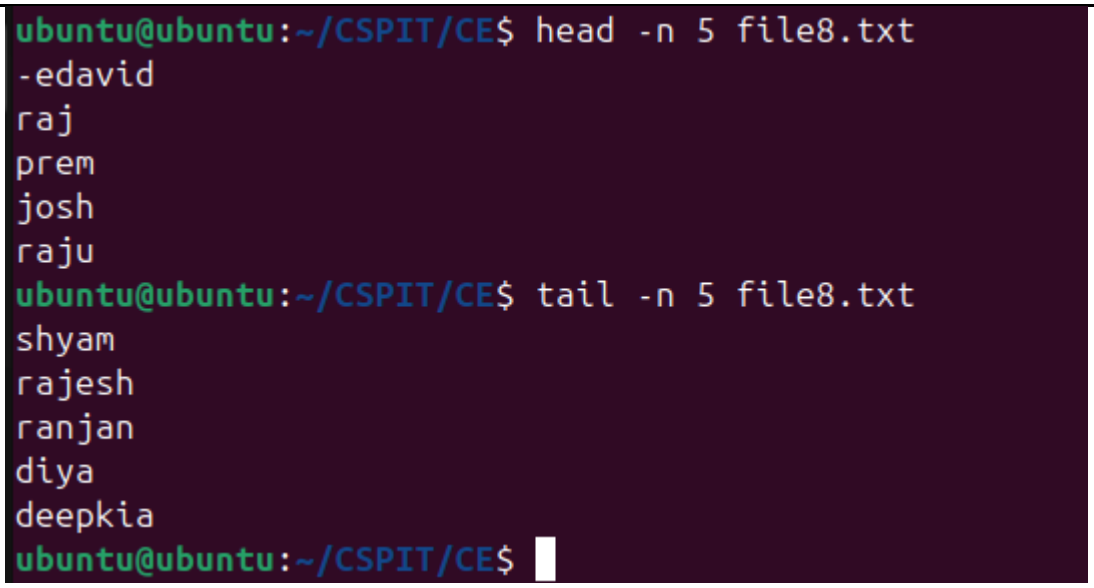
Que.	21. Create “file6.txt” by adding ten name of students. 22. Create “file7.txt” by adding ten name of students.(few names should be common to “file6.txt”)
Command	21. echo -e “david raj prem josh raju shyam juhi hetvi aayush john ”>file6.txt cat file6.txt 22.echo -e “raj prem josh raju shyam ranjesh ranjan diya deepika ”>file7.txt cat file7.txt

Output	

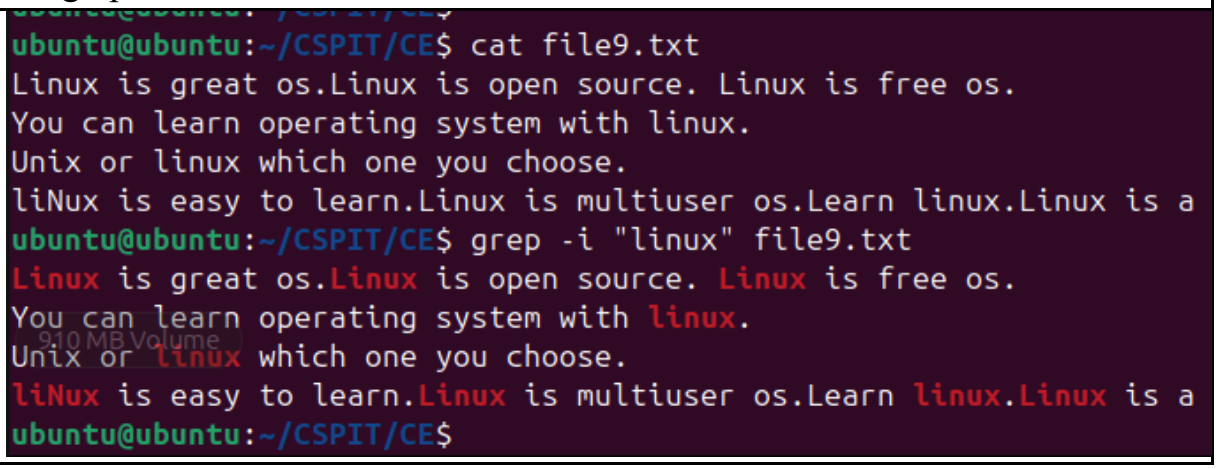
Que.	23. Sort the content of “file6.txt” and “file7.txt” 24. Find the common and unique content in “file6.txt” and “file7.txt” 25. Merge the content of above two files in “file8.txt” 26. Remove the duplicate names from “file8.txt”
Command	23. sort file6.txt -o file6.txt sort file7.txt -o file7.txt 24. comm -12 file6.txt file7.txt comm -23 file6.txt file7.txt comm -13 file6.txt file7.txt 25. cat file6.txt file7.txt > file8.txt 26. sort -u file8.txt -o file8.txt cat file8.txt
Output	

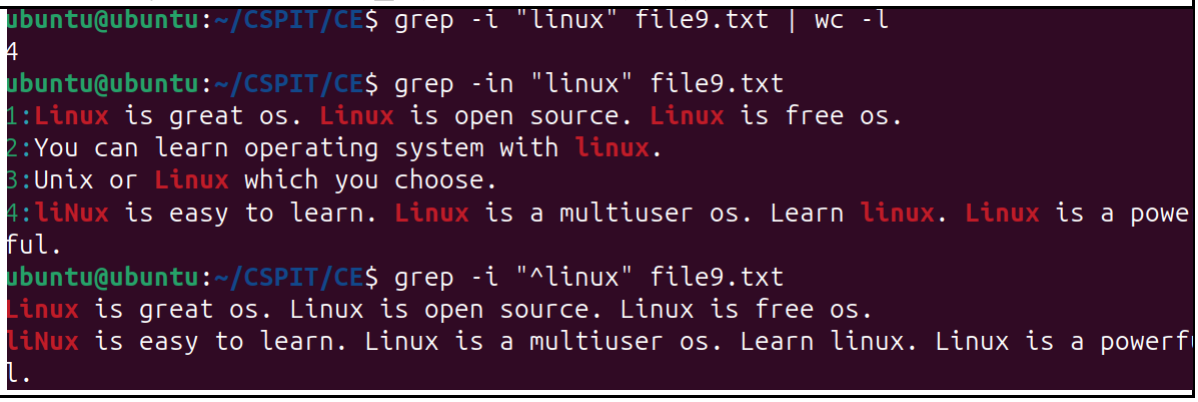
Que.	27. Translate the content of “file1.txt”: a. Lower case to upper case

	b. Remove digits from file
Command	27. a. tr '[:lower:]' '[:upper:]' < file1.txt > file1_no_digits.txt b. tr -d '[:digit:]' < file1.txt > file1_no_digits.txt cat file1_no_digits.txt
Output	

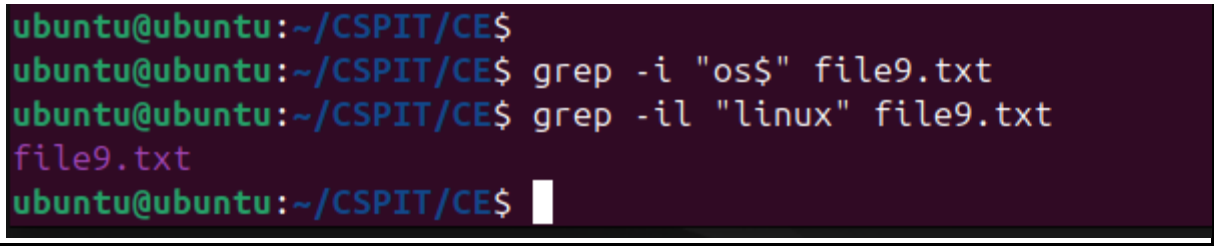
Que.	28. Apply head and tail command to see the content of "file8.txt" with different arguments.
Command	28. head -n 5 file8.txt tail -n 5 file8.txt
Output	

Que.	29. Differentiate between less and more command and check why less is faster than more command. 30. Create a file "file9.txt" having content: Linux is great os. Linux is open source. Linux is free os. You can learn operating system with linux. Unix or linux which one you choose. liNux is easy to learn. Linux is a multiuser os. Learn linux. Linux is a powerful. 31. Find the lines which contains "linux".
Command	29. less file8.txt more file8.txt 30. cat > file9.txt Linux is great os. Linux is open source. Linux is free os.

	You can learn operating system with linux. Unix or linux which one you choose. liNux is easy to learn. Linux is a multiuser os. Learn linux. Linux is a powerful. 31. grep -i 'linux' file9.txt
Output	

Que.	32. Count the number of lines that matches the “linux” 33. Show the line number of file with the line matched 34. Find the lines which start with “linux” 38. Check the file type of lab manual and other files created. 39. Apply history command and redirect your output to “ID No_date.txt”
Command	32. grep -i 'linux' file9.txt | wc -l 33. grep -in 'linux' file9.txt 34. grep -i '^linux' file9.txt 38. file file9.txt File view 39. history > 22DCE006_$(date +%Y%m%d).txt
Output	

Que.	35. Find the lines which ends with “os”. 36. Display the file name that contains “linux”.
Command	35. grep -i 'os$' file9.txt 36. grep -il ‘linux’ file9.txt

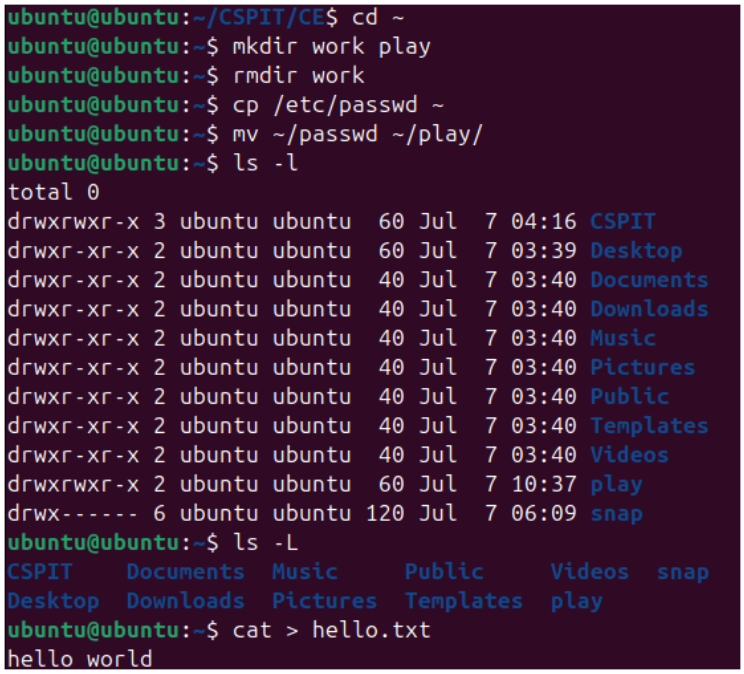
Output	

Que.	37. Download lab manual from department course website.
Command	37. wget <URL>
Output	

Exercise - 1.1 (Advanced)

Try the following command sequence.

Que.	1. Change back into your home directory. 2. Make subdirectories called work and play 3. Delete the subdirectory called work. 4. Copy the file /etc/passwd into your home directory. 5. Move it into the subdirectory play 6. What is the difference between listing the contents of directory play with ls -l and ls -L? 7. Create a file called hello.txt that contains the words "hello world". Can you use "cp " using "terminal" as the source file to achieve the same effect?
Command	1. cd ~ 2. mkdir work play 3. rmdir work 4. cp /etc/passwd ~ 5. mv ~/passwd ~/play/ 6. ls -l (Lists files with detailed information including permissions, number of links, owner, group, size, and timestamp.) Ls -L {follows symbolic links (shows the file or directory the link points to)} 7. cat > hello.txt Hello world or echo "hello world" | cp /dev/stdin hello.txt

Output	

```
ubuntu@ubuntu:~/CSPIT/CE$ cd ~
ubuntu@ubuntu:~$ mkdir work play
ubuntu@ubuntu:~$ rmdir work
ubuntu@ubuntu:~$ cp /etc/passwd ~
ubuntu@ubuntu:~$ mv ~/passwd ~/play/
ubuntu@ubuntu:~$ ls -l
total 0
drwxrwxr-x 3 ubuntu ubuntu  60 Jul  7 04:16 CSPIT
drwxr-xr-x 2 ubuntu ubuntu  60 Jul  7 03:39 Desktop
drwxr-xr-x 2 ubuntu ubuntu  40 Jul  7 03:40 Documents
drwxr-xr-x 2 ubuntu ubuntu  40 Jul  7 03:40 Downloads
drwxr-xr-x 2 ubuntu ubuntu  40 Jul  7 03:40 Music
drwxr-xr-x 2 ubuntu ubuntu  40 Jul  7 03:40 Pictures
drwxr-xr-x 2 ubuntu ubuntu  40 Jul  7 03:40 Public
drwxr-xr-x 2 ubuntu ubuntu  40 Jul  7 03:40 Templates
drwxr-xr-x 2 ubuntu ubuntu  40 Jul  7 03:40 Videos
drwxrwxr-x 2 ubuntu ubuntu  60 Jul  7 10:37 play
drwx------ 6 ubuntu ubuntu 120 Jul  7 06:09 snap
ubuntu@ubuntu:~$ ls -L
CSPIT    Documents  Music     Public     Videos  snap
Desktop  Downloads  Pictures  Templates  play
ubuntu@ubuntu:~$ cat > hello.txt
hello world
```

Que.	8. Copy hello.txt to terminal. What happens? 9. Imagine you were working on a system and someone accidentally deleted the ls command (/bin/ls). How could you get a list of the files in the current directory? Try it. (Do not delete ls command, copy it to some other location from bin) 10. How would you create and then delete a file called "$SHELL"? Try it. 11. How would you create and then delete a file that begins with the symbol #? Try it 12. How would you create and then delete a file that begins with the symbol -? Try it.
Command	8. cp hello.txt terminal (As terminal named file in not present, therefore file with name ‘terminal’ gets created and content of file hello.txt copied to it.) 9. echo * 10. touch ‘$SHELL’ rm ‘$SHELL’ 11. touch ‘#new_file’ rm ‘#new_file’ 12. touch – ‘-file’ rm – ‘-file’

Output	

```
ubuntu@ubuntu:~$ cp hello.txt terminal
ubuntu@ubuntu:~$ echo *
CSPIT Desktop Documents Downloads Music Pictures Public Templates Videos hello.txt p
lay snap terminal
ubuntu@ubuntu:~$ touch '$SHELL'
ubuntu@ubuntu:~$ rm '$SHELL'
ubuntu@ubuntu:~$ touch '#new_file'
ubuntu@ubuntu:~$ rm '#new_file'
ubuntu@ubuntu:~$ touch -- '-file'
ubuntu@ubuntu:~$ rm -- '-file'
```